

CLAIMS

What is claimed is:

1. A method comprising:  
acquiring information about interfering base stations in a vicinity of a base station of  
5 interest (BSOI); and  
choosing one of said interfering base stations as a master base station for said BSOI,  
wherein a master base station is a base station to which another base station is to  
synchronize.
2. The method of claim 1, wherein choosing one of said interfering base stations as  
10 a master base station includes:  
when said interfering base stations are from multiple sync groups, selecting a sync  
group from said multiple sync groups to be a master sync group, wherein a sync group is a  
group of base stations that are currently synchronized with one another;  
when said interfering base stations are all from a common sync group, identifying  
15 said common sync group as said master sync group; and  
when said master sync group includes at least one master base station that is also  
one of said interfering base stations and that has a received signal strength within said BSOI  
that is adequate to perform accurate synchronization, assigning one of said at least one  
master base station as a master base station of said BSOI.
- 20 3. The method of claim 2, further comprising:  
delivering an ID of said assigned master base station and a corresponding ranging  
rule to said BSOI.
4. The method of claim 2, wherein choosing one of said interfering base stations as  
a master base station further includes:  
25 when said master sync group does not include a master base station that is also one  
of said interfering base stations and that has a received signal strength within said BSOI that  
is adequate to perform accurate synchronization, selecting a base station from said master  
sync group that is one of said interfering base stations as the master base station of said  
BSOI; and  
30 creating a new ranging rule for said selected master base station.
5. The method of claim 4, further comprising:  
delivering an ID of said selected master base station and said new ranging rule to

said BSOI and said selected master base station.

6. The method of claim 2, further comprising:

when said interfering base stations are from multiple sync groups and one of said multiple sync groups has been selected as said master sync group, giving said BSOI master  
5 status over sync groups in said multiple sync groups other than said master sync group.

7. The method of claim 6, further comprising:

identifying synchronization chains for said sync groups in said multiple sync groups other than said master sync group, wherein each synchronization chain originates at said BSOI; and  
10 creating a new ranging rule for each master/slave level within each synchronization chain.

8. The method of claim 1, wherein:

acquiring information includes receiving said information from said BSOI, wherein said information is accompanied by a request to assign a master base station to said BSOI.

15 9. A base station controller (BSC) comprising:

a receiver to receive a list of interfering base stations associated with a base station of interest (BSOI); and

a controller to select a master base station for said BSOI from said list of interfering base stations, wherein a master base station is a base station to which another base station is  
20 to synchronize.

10. The BSC of claim 9, further comprising:

a sync group database to store data related to base station sync groups in an associated wireless network, each sync group including one or more base stations in said wireless network that are currently synchronized to one another, wherein said controller is  
25 in communication with said sync group database.

11. The BSC of claim 10, wherein said controller is to:

when said base stations in said list of interfering base stations are from multiple sync groups, select a master sync group from said multiple sync groups;

when said base stations in said list of interfering base stations are from a common  
30 sync group, identify said common sync group as said master sync group; and

select a base station from said list of interfering base stations, that is within said master sync group, for use as a master base station for said BSOI.

12. The BSC of claim 11, wherein:

operation to select a base station from said list includes operation to:

when said master sync group includes at least one master base station that is also one of said interfering base stations and that has a received signal strength in said BSOI that  
5 is adequate to perform accurate synchronization, assign one of said at least one master base stations as a master base station of said BSOI.

13. The BSC of claim 12, wherein:

operation to select a base station from said list includes operation to:

when said master sync group does not include a master base station that is also one  
10 of said interfering base stations and that has a receive signal strength within said BSOI that is adequate to perform accurate synchronization, select a base station from said master sync group that is one of said interfering base stations as the master base station of said BSOI.

14. The BSC of claim 13, wherein:

operation to select a base station from said list includes operation to:

when said master sync group does not include a master base station that is also one  
15 of said interfering base stations, create a new ranging rule for said selected master base station.

15. The BSC of claim 11, wherein said controller is configured to:

when said base stations in said list of interfering base stations are from multiple  
20 sync groups and one of said sync groups has been selected as a master sync group:  
give said BSOI master base station status over sync groups in said multiple sync groups other than said master sync group;

identify synchronization chains for said sync groups in said multiple sync groups  
other than said master sync group, wherein each synchronization chain originates at said  
25 BSOI; and

create a new ranging rule for each master/slave level within each synchronization chain.

16. The BSC of claim 9, further comprising:

a transmitter to transmit a master base station ID and a corresponding ranging rule  
30 to said BSOI.

17. A method comprising:

acquiring an ID of a master base station and a corresponding ranging rule;

initially synchronizing to said master base station while in a subscriber station mode of operation; and

periodically listening for a ranging code from said master base station while in a base station mode of operation, after initially synchronizing, for use in refreshing  
5 synchronization with said master base station.

18. The method of claim 17, wherein periodically listening includes:

determining whether a frame number specified by said ranging rule has been reached;

allocating a ranging time slot in a current frame when said frame number has been  
10 reached; and

monitoring said allocated ranging time slot for said ranging code.

19. The method of claim 17, further comprising:

estimating frequency and time offsets using said ranging code when a ranging code is detected; and

15 adjusting a clock using said frequency and time offsets.

20. An apparatus comprising:

a wireless transceiver; and

a controller to achieve and maintain synchronization between said apparatus and interfering base stations in a wireless network, said controller to:

20 determine the identity of a master base station within said wireless network to which said apparatus is to synchronize;

establish initial synchronization with said master base station while in a subscriber station mode of operation; and

periodically look for a ranging code transmitted by said master base station for use in  
25 refreshing synchronization with said master base station after initial synchronization has been established.

21. The apparatus of claim 20, wherein:

said controller is to periodically look for said ranging code while in a base station mode of operation.

30 22. The apparatus of claim 20, wherein:

said controller is to acquire information describing a ranging rule associated with said master base station, wherein said controller is to look for said ranging code at times

specified by said ranging rule.

23. The apparatus of claim 20, wherein:

said controller is to estimate frequency and time offsets using said ranging code, when a ranging code has been detected, and use said frequency and time offsets to correct a  
5 clock of said apparatus.

24. The apparatus of claim 20, wherein:

said controller is to: collect information on interfering base stations in an environment about said apparatus and deliver said collected information, along with a request for assignment of a master base station, to a remote network controller when said  
10 apparatus is to join said wireless network.

25. A base station comprising:

at least one dipole antenna;

a wireless transceiver in communication with said at least one dipole antenna; and

a controller to achieve and maintain synchronization between said base station and  
15 interfering base stations in a wireless network, said controller to:

determine the identity of a master base station within said wireless network to which said base station is to synchronize;

establish initial synchronization with said master base station while in a subscriber station mode of operation; and

20 periodically look for a ranging code transmitted by said master base station for use in refreshing synchronization with said master base station after initial synchronization has been established.

26. The base station of claim 25, wherein:

said controller is to periodically look for said ranging code while in a base station  
25 mode of operation.

27. The base station of claim 25, wherein:

said controller is to acquire information describing a ranging rule associated with said master base station, wherein said controller is to look for said ranging code at times specified by said ranging rule.

30 28. An article comprising a storage medium having instructions stored thereon that, when executed by a computing platform, operate to:

acquire information about interfering base stations in a vicinity of a base station of

interest (BSOI); and

choose one of said interfering base stations as a master base station for said BSOI, wherein a master base station is a base station to which another base station is to synchronize.

5           29. The article of claim 28, wherein:

operation to choose one of said interfering base stations as a master base station includes operation to:

when said interfering base stations are from multiple sync groups, select a sync group from said multiple sync groups to be a master sync group, wherein a sync group is a  
10 group of base stations that are currently synchronized with one another;

when said interfering base stations are all from a common sync group, identify said common sync group as said master sync group; and

when said master sync group includes at least one master base station that is also one of said interfering base stations and that has a received signal strength within said BSOI  
15 that is adequate to perform accurate synchronization, assign one of said at least one master base stations as a master base station of said BSOI.

30. The article of claim 29, wherein:

operation to choose one of said interfering base stations as a master base station further includes operation to:

20 when said master sync group does not include a master base station that is also one of said interfering base stations and that has a received signal strength within said BSOI that is adequate to perform accurate synchronization, select a base station from said master sync group that is one of said interfering base stations as the master base station of said BSOI; and

25 create a new ranging rule for said selected master base station.